

WHAT IS CLAIMED IS:

1. A method of altering blood flow through the left ventricle, comprising the steps of:
providing an element which is movable between collapsed and expanded conditions;
collapsing the element in a delivery device;
advancing the element into the left ventricle in the collapsed condition with the delivery device;
expanding the element in the left ventricle; and
securing the element to the wall of the left ventricle to form a circumferential attachment to the wall of the left ventricle, wherein the element separates the left ventricle into a blood flow side and a non-blood flow side, the element forming a hemostatic seal at the circumferential attachment so that pressure in the blood flow side is not communicated to the non-blood flow side thereby reducing pressure on the ventricular wall of the non-blood flow side.
2. The method of claim 1, wherein:
the securing step is carried out with the circumferential attachment being below the papillary muscles.
3. The method of claim 2, wherein:
the securing step is carried out with the circumferential attachment being within 1 cm of the papillary muscles.
4. The method of claim 1, wherein:
the advancing step is carried out with the element being delivered through a peripheral vessel, through the aortic valve and into the left ventricle.
5. The method of claim 1, wherein:
the advancing step is carried out with the element being delivered through a wall of the left ventricle.

6. The method of claim 1, wherein:
the securing step is carried out with the circumferential attachment separating the left ventricle into a blood flow side and a non-blood flow side, the blood flow side being a side in which blood circulates through the heart.
7. The method of claim 1, wherein:
the expanding step is carried out with the element having an outer surface which is at least partly separated from the inner wall of the left ventricle to form the non blood flow side.
8. The method of claim 7, wherein:
the providing step is carried out with the outer surface of the element being generally shaped to provide a desired geometry of the left ventricle wall.
9. The method of claim 7, wherein:
the providing step is carried out with the outer surface of the element being generally convex and having an apex when in the expanded position.
10. The method of claim 1, wherein:
the securing step is carried out without cutting a wall of the left ventricle.
11. The method of claim 1, further comprising the step of:
evacuating blood from the non-blood flow side after the expanding step.
12. The method of claim 11, wherein:
the evacuating step is carried out until at least part of the left ventricle wall moves into contact with the element.
13. The method of claim 1, further comprising the step of:
introducing a tool into the chest;
engaging the heart with the tool; and
securing the element in the left ventricle using the tool.

14. The method of claim 1, wherein:

the securing step is carried out with the tool extending through a portion of the left ventricle which is part of an isolated portion of the left ventricle, the isolated portion not forming part of a blood flow path through the left ventricle.

15. The method of claim 13, wherein:

the securing step is carried out by driving an anchor through the wall of the left ventricle and into engagement with the element.

16. The method of claim 13, wherein:

the securing step is carried out with the tool having an energy source, the energy source being activated to secure the element to the wall of the left ventricle.

17. The method of claim 13, wherein:

the securing step is carried out by displacing the heart before securing the element to the left ventricle using the tool.

18. The method of claim 1, further comprising the step of:

everting the element within the left ventricle.

19. The method of claim 18, further comprising the step of:

evacuating blood from an isolated region of the left ventricle;

the expanding step being carried out with the element contacting the wall thereby separating the left ventricle into a blood flow side and the isolated side;

the everting step being carried out after the evacuating step.

20. The method of claim 1, wherein:

the providing step is carried out with the delivery device having a filter, the filter being movable between collapsed and expanded positions.

21. The method of claim 20, further comprising the step of:
expanding the filter to the expanded position before at least one of the expanding and securing steps.
22. The method of claim 20, further comprising the step of:
expanding the filter in the left ventricle.
23. The method of claim 1, further comprising the step of:
displacing the heart to a displaced condition; and
holding the heart in the displaced condition using the element.
24. The method of claim 23, wherein:
the displacing step is carried out by twisting the heart.
25. The method of claim 23, wherein:
the displacing step is carried out with a tool extending into the chest through an opening in the chest, the tool engaging an external surface of the heart.
26. The method of claim 23, further comprising the step of:
attaching the heart to the element using an anchoring device extending between the heart and the element.
27. The method of claim 23, wherein:
the displacing step is carried out with the heart being displaced by the element.
28. The method of claim 1, wherein:
the providing step is carried out with a size of the element being selected before the delivering step.

29. The method of claim 1, wherein:
the providing step is carried out with the element being sized to extend across a predetermined part of the left ventricle below the papillary muscles.
30. The method of claim 1, wherein:
the providing step is carried out with the element including a convex outer surface having an apex.
31. The method of claim 1, wherein:
the providing step is carried out with the element having a plurality of support members extending toward the apex.
32. The method of claim 1, further comprising the step of:
collapsing the element after the expanding step;
repositioning the element after the collapsing step; and
reexpanding the element after the repositioning step.
33. A method of altering blood flow through the left ventricle, comprising the steps of:
providing an element which is movable from a collapsed position to an expanded position;
advancing the element into a left ventricle using a delivery device, the element being in the collapsed position while in the delivery device;
expanding the element within the left ventricle;
securing the element to an inner wall of the left ventricle at a position below the papillary muscles so that the element separates the left ventricle into a blood flow side and an isolated side, wherein the blood flow side forms part of a blood flow path through the heart and the isolated side does not.
34. The method of claim 33, wherein:
the securing step is carried out with the circumferential attachment being below the papillary muscles.

35. The method of claim 34, wherein:
the securing step is carried out with the circumferential attachment being within 1 cm of the papillary muscles.
36. The method of claim 33, wherein:
the advancing step is carried out with the element being delivered through a peripheral vessel, through the aortic valve and into the left ventricle.
37. The method of claim 33, wherein:
the advancing step is carried out with the element being delivered through a wall of the left ventricle.
38. The method of claim 33, wherein:
the securing step is carried out with the circumferential attachment separating the left ventricle into a blood flow side and a non-blood flow side, the blood flow side being a side in which blood circulates through the heart.
39. The method of claim 33, wherein:
the expanding step is carried out with the element having an outer surface which is at least partly separated from the inner wall of the left ventricle to form an isolated portion of the left ventricle.
40. The method of claim 39, wherein:
the providing step is carried out with the outer surface of the element being generally shaped to provide a desired geometry of the left ventricle wall.
41. The method of claim 39, wherein:
the providing step is carried out with the outer surface of the element being generally convex and having an apex when in the expanded position.
42. The method of claim 33, wherein:
the securing step is carried out without cutting a wall of the left ventricle.

43. The method of claim 42, further comprising the step of:
evacuating blood from an isolated portion after the expanding step;
the expanding and securing steps separating the left ventricle into a blood flow side and the isolated portion.
44. The method of claim 43, wherein:
the evacuating step is carried out until at least part of the left ventricle wall moves into contact with the element.
45. The method of claim 33, further comprising the step of:
introducing a tool into the chest; and
engaging the heart with the tool;
wherein the securing step is carried out with the element being secured in the left ventricle using the tool.
46. The method of claim 45, wherein:
the securing step is carried out with the tool extending through a portion of the left ventricle which is part of an isolated portion of the left ventricle, the isolated portion not forming part of a blood flow path through the left ventricle.
47. The method of claim 45, wherein:
the securing step is carried out by driving an anchor through the wall of the left ventricle and into engagement with the element.
48. The method of claim 45, wherein:
the securing step is carried out with the tool having an energy source, the energy source being activated to secure the element to the wall of the left ventricle.

49. The method of claim 45, wherein:
the securing step is carried out by displacing the heart before securing the element to the left ventricle using the tool.
50. The method of claim 33, further comprising the step of:
everting the element within the left ventricle.
51. The method of claim 50, further comprising the step of:
evacuating blood from an isolated region of the left ventricle;
the expanding step being carried out with the element contacting the wall thereby separating the left ventricle into a blood flow side and the isolated side;
the everting step being carried out after the evacuating step.
52. The method of claim 33, wherein:
the providing step is carried out with the delivery device having a filter, the filter being movable between collapsed and expanded positions.
53. The method of claim 52, further comprising the step of:
expanding the filter to the expanded position before at least one of the expanding and securing steps.
54. The method of claim 52, further comprising the step of:
expanding the filter in the left ventricle.
55. The method of claim 33, further comprising the step of:
displacing the heart to a displaced condition; and
holding the heart in the displaced condition using the element.
56. The method of claim 55, wherein:
the displacing step is carried out by twisting the heart.

57. The method of claim 55, wherein:
the displacing step is carried out with a tool extending into the chest through an opening in the chest, the tool engaging an external surface of the heart.
58. The method of claim 55, further comprising the step of:
attaching the heart to the element using an anchoring device extending between the heart and the element.
59. The method of claim 55, wherein:
the displacing step is carried out with the heart being displaced by the element.
60. The method of claim 33, wherein:
the providing step is carried out with a size of the element being selected before the delivering step.
61. The method of claim 33, wherein:
the providing step is carried out with the element being sized to extend across a predetermined part of the left ventricle below the papillary muscles.
62. The method of claim 33, wherein:
the providing step is carried out with the element including a convex outer surface having an apex.
63. The method of claim 33, wherein:
the providing step is carried out with the element having a plurality of support members extending toward the apex.
64. The method of claim 33, further comprising the step of:
collapsing the element after the expanding step;
repositioning the element after the collapsing step; and
reexpanding the element after the repositioning step.

65. A system for altering blood flow through the left ventricle, the system comprising:
a delivery device;
a sealing element for sealing against an inner wall of a left ventricle, the sealing element a body having a generally convex outer surface, a circumferential sealing portion which is attached to the body, the circumferential sealing portion configured to seal against an internal wall of the left ventricle.
66. The system of claim 65, wherein:
the convex outer surface of the body has an apex, the convex outer surface and the apex generally conforming to a desired shape of a heart into which the device is implanted.
67. The system of claim 65, further comprising:
an attachment tool, the attachment tool being positioned outside the heart and being configured to engage the outside surface of the heart to attach at least part of the element to the wall of the left ventricle.
68. The system of claim 65, wherein:
the attachment tool has an anchor, the anchor being driven through the heart wall and into engagement with the element.
69. A method of altering blood flow through the left ventricle, comprising the steps of:
providing an element which is movable between collapsed and expanded conditions;
collapsing the element in a delivery device;
advancing the element into the left ventricle in the collapsed condition with the delivery device;
expanding the element in the left ventricle;
securing the element to the wall of the left ventricle to separate the left ventricle into a blood flow side and a non-blood flow side; and
reducing the volume of the non-blood flow side.

70. The method of claim 69, further comprising the step of:
maintaining a reduced volume in the non-blood flow side.
71. The method of claim 69, wherein:
the reducing step is carried out by evacuating blood from the non-blood flow side.
72. The method of claim 69, wherein:
the reducing step is carried out by manipulating the wall of the left ventricle on the non-blood flow side to reduce the volume of the non-blood flow side.
73. The method of claim 69, wherein:
the reducing step is carried out with the element forming a seal which prevents blood from passing from the blood flow side to the non-blood flow side.
74. The method of claim 69, wherein:
the reducing step is carried out with the element forming a hemostatic seal with the wall of the left ventricle.
75. The method of claim 69, wherein:
the securing step is carried out with the element forming a hemostatic seal at the circumferential attachment so that pressure in the blood flow side is not communicated to the non-blood flow side thereby reducing pressure on the ventricular wall of the non-blood flow side.
76. The method of claim 69, wherein:
the securing step is carried out with the circumferential attachment being below the papillary muscles.
77. The method of claim 76, wherein:
the securing step is carried out with the circumferential attachment being within 1 cm of the papillary muscles.

78. The method of claim 69, wherein:
the advancing step is carried out with the element being delivered through a wall of the left ventricle.
79. The method of claim 69, wherein:
the providing step is carried out with an outer surface of the element being generally shaped to provide a desired geometry of the left ventricle wall.
80. The method of claim 79, wherein:
the providing step is carried out with the outer surface of the element being generally convex and having an apex when in the expanded position.
81. The method of claim 69, wherein:
the reducing step is carried out until at least part of the left ventricle wall moves into contact with the element.
82. The method of claim 69, further comprising the step of:
introducing a tool into the chest;
engaging the heart with the tool; and
securing the element in the left ventricle using the tool.
83. The method of claim 69, wherein:
the securing step is carried out with the tool extending through a portion of the left ventricle which is part of an isolated portion of the left ventricle, the isolated portion not forming part of a blood flow path through the left ventricle.
84. The method of claim 69, wherein:
the securing step is carried out by driving an anchor through the wall of the left ventricle and into engagement with the element.

85. The method of claim 69, wherein:
the securing step is carried out using a tool having an energy source, the energy source being activated to secure the element to the wall of the left ventricle.
86. The method of claim 69, wherein:
the securing step is carried out by displacing the heart before securing the element to the left ventricle using the tool.
87. The method of claim 69, further comprising the step of:
everting the element within the left ventricle.
88. The method of claim 69, further comprising the step of:
evacuating blood from an isolated region of the left ventricle;
the expanding step being carried out with the element contacting the wall thereby separating the left ventricle into a blood flow side and the isolated side;
the everting step being carried out after the evacuating step.
89. The method of claim 69, wherein:
the providing step is carried out with the delivery device having a filter, the filter being movable between collapsed and expanded positions.
90. The method of claim 89, further comprising the step of:
expanding the filter to the expanded position before at least one of the expanding and securing steps.
91. The method of claim 89, further comprising the step of:
expanding the filter in the left ventricle.
92. The method of claim 69, further comprising the step of:
displacing the heart to a displaced condition; and
holding the heart in the displaced condition using the element.

93. The method of claim 92, wherein:
the displacing step is carried out by twisting the heart.
94. The method of claim 92, wherein:
the displacing step is carried out with a tool extending into the chest through an opening in the chest, the tool engaging an external surface of the heart.
95. The method of claim 69, wherein:
the providing step is carried out with a size of the element being selected before the delivering step.
96. The method of claim 69, further comprising the step of:
collapsing the element after the expanding step;
repositioning the element after the collapsing step; and
reexpanding the element after the repositioning step.
97. A system for altering blood flow through the left ventricle, the system comprising:
a delivery device;
a sealing element for sealing against an inner wall of a left ventricle, the sealing element a body having a generally convex outer surface, a circumferential sealing portion which is attached to the body, the circumferential sealing portion configured to seal against an internal wall of the left ventricle, the sealing element separating the left ventricle into a blood flow side and a non-blood flow side, the sealing element preventing blood to pass from the blood flow side to the non-blood flow side thereby reducing pressure forces on the wall of the non-blood flow side.
98. The system of claim 97, further comprising:
an attachment device for attaching part of the convex outer surface to the wall of the left ventricle.

- ⁹⁹~~98~~. The system of claim 97, wherein:
the sealing element is configured to hold the heart in a biased shape when secured within the left ventricle.
- ¹⁰⁰~~99~~. The system of claim 97, wherein:
the attachment device mechanically attaches the sealing element to the heart.
- ¹⁰¹~~100~~. The system of claim 97, wherein:
the attachment device delivers energy to secure the sealing element to the heart.
- ¹⁰²~~101~~. The method of claims 1, 33 or 69, wherein:
the securing step is carried out with the element isolating at least one of a ventricular septal defect and a perforation in the ventricular wall.